



CONTENTS

THEN AND NOW, <i>Harland G. Wood</i>	1
TIME-RESOLVED FLUORESCENCE OF PROTEINS, <i>Joseph M. Beechem and Ludwig Brand</i>	43
ADP-RIBOSYLATION, <i>Kunihiro Ueda and Osamu Hayaishi</i>	73
GENETIC ANALYSIS OF PROTEIN EXPORT IN <i>ESCHERICHIA COLI</i> K12, <i>S. A. Benson, M. N. Hall, and T. J. Silhavy</i>	101
CELL ADHESION AND THE MOLECULAR PROCESSES OF MORPHOGENESIS, <i>Gerald M. Edelman</i>	135
MECHANISM AND CONTROL OF TRANSCRIPTION INITIATION IN PROKARYOTES, <i>William R. McClure</i>	171
RECEPTORS AND PHOSPHOINOSITIDE-GENERATED SECOND MESSENGERS, <i>Lowell E. Hokin</i>	205
THIOREDOXIN, <i>Arne Holmgren</i>	237
THE MEMBRANE SKELETON OF HUMAN ERYTHROCYTES AND ITS IMPLICATIONS FOR MORE COMPLEX CELLS, <i>Vann Bennett</i>	273
ROLE OF REVERSIBLE OXIDATION-REDUCTION OF ENZYME THIOLS-DISULFIDES IN METABOLIC REGULATION, <i>D. M. Ziegler</i>	305
MOLECULAR BIOLOGY AND GENETICS OF TUBULIN, <i>Don W. Cleveland and Kevin F. Sullivan</i>	331
NUCLEOSIDE PHOSPHOROTHIOATES, <i>F. Eckstein</i>	367
GROWTH HORMONE RELEASING FACTORS, <i>Nicholas Ling, Fusun Zeytin, Peter Böhlen, Fred Esch, Paul Brazeau, William B. Wehrenberg, Andrew Baird, and Roger Guillemin</i>	403
INDUCIBLE DNA REPAIR SYSTEMS, <i>Graham C. Walker</i>	425

vi CONTENTS (continued)

VITAMIN K-DEPENDENT CARBOXYLASE, <i>J. W. Suttie</i>	459
PROTEIN CARBOXYL METHYLTRANSFERASES: TWO DISTINCT CLASSES OF ENZYMES, <i>Steven Clarke</i>	479
EVOLVING RIBOSOME STRUCTURE: DOMAINS IN ARCHAEABACTERIA, EUBACTERIA, EOCYTES AND EUKARYOTES, <i>James A. Lake</i>	507
VIROIDS, <i>Detlev Riesner and Hans J. Gross</i>	531
THE CHEMICAL MODIFICATION OF ENZYMATIC SPECIFICITY, <i>Emil Thomas Kaiser, David Scott Lawrence, and Steven Edward Rokita</i>	565
EFFECTS OF SITE-SPECIFIC AMINO ACID MODIFICATION ON PROTEIN INTERACTIONS AND BIOLOGICAL FUNCTION, <i>Gary K. Ackers and Francine R. Smith</i>	597
ASSEMBLY OF ASPARAGINE-LINKED OLIGOSACCHARIDES, <i>Rosalind Kornfeld and Stuart Kornfeld</i>	631
DNA TOPOISOMERASES, <i>James C. Wang</i>	665
HUMAN APOLIPOPROTEIN MOLECULAR BIOLOGY AND GENETIC VARIATION, <i>Jan L. Breslow</i>	699
BIOSYNTHESIS AND METABOLISM OF TETRAHYDROBIOPTERIN AND MOLYBDOPTERIN, <i>Charles A. Nichol, Gary K. Smith, and David S. Duch</i>	729
STRUCTURAL ANALYSIS OF GLYCOCONJUGATES BY MASS SPECTROMETRY AND NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY, <i>Charles C. Sweeley and Hernan A. Nunez</i>	765
ORIGIN OF IMMUNE DIVERSITY: GENETIC VARIATION AND SELECTION, <i>Tasuku Honjo and Sonoko Habu</i>	803
THE CREATINE-CREATINE PHOSPHATE ENERGY SHUTTLE, <i>Samuel P. Bessman and Christopher L. Carpenter</i>	831
TRANSPPOSITIONAL RECOMBINATION IN PROKARYOTES, <i>Nigel D. F. Grindley and Randall R. Reed</i>	863
PROTEIN-TYROSINE KINASES, <i>Tony Hunter and Jonathan A. Cooper</i>	897
PROTEIN KINASES IN THE BRAIN, <i>Angus C. Nairn, Hugh C. Hemmings, Jr., and Paul Greengard</i>	931

CHEMICAL PROBES OF THE MITOCHONDRIAL ATP SYNTHESIS AND TRANSLOCATION, <i>Pierre V. Vignais and Joël Lunardi</i>	977
THE MITOCHONDRIAL ELECTRON TRANSPORT AND OXIDATIVE PHOSPHORYLATION SYSTEM, <i>Youssef Hatefi</i>	1015
DEVELOPMENTAL REGULATION OF HUMAN GLOBIN GENES, <i>Stefan Karlsson and Arthur W. Nienhuis</i>	1071
EUKARYOTIC PROTEIN SYNTHESIS, <i>Kivie Moldave</i>	1109
PSORALENS AS PHOTOACTIVE PROBES OF NUCLEIC ACID STRUCTURE AND FUNCTION: ORGANIC CHEMISTRY, PHOTOCHEMISTRY, AND BIOCHEMISTRY, <i>George D. Cimino, Howard B. Gamper, Stephen T. Isaacs, and John E. Hearst</i>	1151
THE APPLICATION OF NEUTRON CRYSTALLOGRAPHY TO THE STUDY OF DYNAMIC AND HYDRATION PROPERTIES OF PROTEINS, <i>Anthony A. Kossiakoff</i>	1195
INDEXES	
Author Index	1229
Subject Index	1299
Cumulative Index of Contributing Authors, Volumes 50-54	1325
Cumulative Index of Chapter Titles, Volumes 50-54	1328